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ABSTRACT

The major differences between the school of 1980 and that of today will be emphasis on individualized learning. Another trend will be the changing role of the teacher from a lecturer and verbal source of facts to a manager of the learning process and source of counseling and motivational support for students. Physical facilities will be characterized by open space planning to provide variety and flexibility in the use and size of spaces and to reduce conventional hallway space. Educational facilities of 1980 will also be made available as learning centers for people of all ages because the process of education will include learning experiences in the community. (Hard copy may reproduce poorly because of marginal legibility.) (Author/MLF)

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"THE SCHOOLHOUSE OF 1980"

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Greeting:

My task is pleasant today because it requires me to attempt a look at education 1980. For me this is very exciting because I see new forms of education and dreams that educators have had for centuries coming true. I am well aware that my topic involves an attempt to portray the physical facilities that will house the educational process in 1980; but to do this, it is mandatory that I first concern myself with education and develop what seems to be the form of the learning process for the 80's. Buildings to house the educational process, if they are to be great ones, must reflect the process they contain. Certainly you realize that buildings are not education. In the final analysis, they are big, cost a lot and show a lot, but, in the real sense, they are simply another of the educational tools like curriculum, a piece of chalk or a book.

Perhaps education is almost life itself. Certainly it is learning how to learn, and learning is a lifelong process. AS AN ARCHITECT, MANY WOULD ASSUME THAT MY FIRST CONCERN IS THE BUILDING. THIS IS NOT THE CASE. MY

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CONCERN IS THE FORM AND PURPOSE OF LIFE THAT THE BUILDING IS MEANT TO HOUSE.

When we look at our schools today, in many cases, we are displeased and often bewildered. In New Jersey, an 11-year-old tells of the use of drugs by his classmates. In Los Angeles, students riot in halls and school yards. In South Carolina, adults overturn buses carrying children. In Colorado, college students in a teaching methods course are advised to think of the classroom as a battlegreund---the teacher against the student. In a high school English class, students take turns reading aloud from a novel, 50 minutes a day for a numbing six weeks. Over the nation the dropout rate increases. If we look beyond our schools, we get the feeling that man has come to the edge of disaster. All around him he sees holocaust, famine, and a poisoned world, not knowing how he got there or how to turn aside. Have our schools dealt with the wrong subjects? Did they leave something out?

YES. It is not difficult to paint a rather grim picture concerning much of education in America. It is clearly evident that there is considerable dissatisfaction with our present educational system - that there is a cry for change.

It seems to me, however, that in today's education there is much good. At the same time we acknowledge weaknesses, more and more we see schools doing things unthought of a decade ago. Many children in our schools are bright, alert, interested in life, excited about learning, eager to explore. We have teachers and parents willing to fight for better education.

Education is deeply involved in many of the social needs confronting our

country today. There seems little question that the next 10 years will see massive adjustment in education to accommodate various social needs. These adjustments will probably find education becoming almost the community itself. For as long as most of us can remember, education has worked essentially in an atmosphere of isolation. It happened at a particular place and at a particular time. We believed we went to the school house and there we would learn; and when we left, we did something else. This is no longer the case, and educators can't even pretend that it is true anymore because communities will not permit it.

This is a logical time to discuss the rate of change factor. To me, the most powerful characteristic of our society today is the speed of change. CHANGE IS THE CENTRAL FACT OF THE WORLD WE LIVE IN, AND IT IS LITERALLY IMPOSSIBLE TO OVERSTATE THE SIGNIFICANCE OF THIS FACT. There are no examples in earlier history that remotely resemble the pace at which change is taking place today. We have modified our environment so radically, and I use the word environment in the broadest terms to include education, that now we must modify ourselves and our systems in order to exist in this new environment. It simply is not possible to continue living in the old one. To be so naive as to assume that education is not involved is almost a criminal act when we consider the profound effect it can have upon the lives of our young people. We find ourselves bewildered, feeling lost, groping for answers to many questions, unable to understand much of what is happening; and we are only in the very beginning of this world of rapid change.

OUR CHILDREN ARE GOING TO SPEND ONE-HALF OF THEIR LIVES IN THE 21ST CENTURY, SO HOW CAN ANY REASONABLE HUMAN BEING NOT QUESTION THE IRRELEVANCY, THE ISOLATION AND THE REDUNDANCY THAT EXISTS IN THE MAJORITY OF AMERICAN SCHOOLS.

Amidst this dilemma, as one looks at the whole of education throughout our country, there is a bright side for we find exciting new forms of education, exciting new methods of teaching, and exciting new tools for education. These discoveries are much like a jigsaw puzzle, and, currently, pieces are widely scattered and seldom, if ever, assembled in enough of a group to create totally new educational systems. We do appear, however, to be passing over the threshhold in our knowledge of planning processes that enable us to put together many of these exciting segments and thus begin to create the format that provides some insight on education 1980.

We were able to reach the moon because we developed outstanding planning processes, searched the country for all the pieces of information available, established pipelines to gather the information and fed it into central planning systems to focus on defined goals. The result was a dramatic landing on the moon. We have the full capability in America to make a moon landing in education anytime we make a reasonable assembly of the pieces available to us after following good pianning processes.

Let us attempt to unravel the school of tomorrow. As I have stated previously, we will discuss educational concepts first because a school facility itself, the building, is only the result of an educational philosophy. To discuss the building, you must first

discuss the educational program upon which it's design is based. Although I am going to outline various educational concepts that seem clearly predictable for the design of the school facility of 1980, I must make it clear that no one can give you an absolutely accurate road map. None of the trends, the concepts or predictions I will discuss are mine alone. They are based upon extensive study of education and upon predictable technology. The trends to be discussed today are those that are most meaningful to me, as an architect, in carrying out my assignments to design new school facilities. There are other changes in the offering that perhaps are purely educational. In developing the statements on these trends, in many cases, I will be using facts derived from actual experience in designing facilities for education of the future. Most of the projects in our office utilize one or all of these concepts. Perhaps this would indicate that my discussion today is not about 1980, but, rather, the immediate future. This is probably true in that examples of facilities that I will describe, in some cases, are in existence today or in a design stage. It is felt these are the forerunners and indicate or give us a long distance view of education 1980 and the facilities that will house the educational system.

Consideration of individual students, differing in educational needs, capabilities and emotions will become paramount in the school of tomorrow. Perhaps the major difference educationally between the school of 1980 and that of today will be emphasis on INDIVIDUALIZED LEARNING. Certainly, individualized learning is not a new

goal for education. In fact, if you study the history of the learning process, you will find that as far back as you can go it seemed to be the prime goal of the educator. The significant factor at this point in time is that we now have the tools available to make this dream a reality. As an architect, individualized instruction obviously has additional meaning beyond simply changing the learning process. Considering this point, to me it is far more significant to understand what the educators are talking about and, from this, interpret the functions into bricks and mortar.

The vocabulary in our office does not include the word "classroom." It is not that we are opposed to classrooms, but that the word implies, visually and mentally, a box. Classrooms are an educational condition and a portion of an educational facility that has, for too many years, become the standard measurement in design of school buildings and judgment as to the quality of the educational system. The box approach places 25 to 30 students - each a unique human being with different abilities, different backgrounds, different emotions, different visual appearance and different desires - in a space called a classroom. The word classroom also implies a teacher who basically has been given or decides what facts constitute the learning that is to take place. This teacher presents facts verbally to the class. By most standards, the highest percentage of students reached by such a method would be in the neighborhood of 20%. The rest of the class is either ahead of the teacher, behind the teacher, or simply isn't inspired or motivated. The redundancy in such a situation is excessive. The sense of failure among students because of grading procedures is deplorable. Outstanding teachers attempt to cope with this situation by many methods. In the final end, the

most ingenious and capable teacher is only able to moderately correct the tragedy of this cage-like approach to the learning process.

There seems little doubt that the majority of educators today feel that greater attention to the individual differences of students is absolutely mandatory. It will be a foundation of educational systems of 1980. There will be a variety of approaches to presenting an educational system that recognizes these unique differences in young people. But, regardless of these variations, there are profound implications not only in the educational system, but in the school buildings themselves.

Learning for students in the schools of tomorrow will be based primarily upon their individual abilities, motivations and interests. Integrated instructional materials will be developed in functional lesson units rather than larger courses or curricula now existing. These lesson units will range from a few minutes to more than an hour and will provide concepts and related information which the student can transform into knowledge and judgement concerning the topic. The lesson unit approach to instruction will enable the student and the educational system to lessen the degree of redundancy in instruction and, at the same time, increase efficiency by permitting intensive learning to take place at the student's own pace. Schedules in a school facility of 1980 will be immensely flexible, and, in many cases, will be intimate, ad hoc arrangements between an individual student and a teacher. There will be no classes, per se, as we envision them today.

The condition of failure will be drastically curtailed because each student will be making regular achievements. The degree of achievement will, of course, vary from

student to student but, still, the student will be achieving because he will be in competition with himself instead of the system. There are those who envision individualized learning as a very free situation where a student simply does as he chooses each day. This is not the case, and, although students will be moving on individual schedules, they will, each day, have commitments regarding what they are going to do and what their activities will consist of. Planning will be done in close consultation with a teacher and it will be, essentially, a schedule that lists these activities the same as is done for students in schools today. The heart of the difference is, of course, the tailoring of the learning process to the individual students and building his learning experiences around him.

There will be much technology supporting this individualized learning. At some time in the future, perhaps by 1980, computer-assisted instruction will play a significant role. In the next 10 years, there will be a vast array of new media available, designed with packages of learning for an individualized course of education. It is imperative that the full details of the meaning of individualized learning be understood by all of those involved in any phase of education.

Another clear trend is THE CHANGING ROLE OF THE TEACHER. The discussion on individualized learning provides a glimpse at a massive change in the educational process, and is a key to unlocking other trends. Perhaps the first door to change that is unlocked is the function and the role of the teacher. It is a startling fact that 70 to 80 percent of what a teacher does in most schools today will

not be done in 1980. This alters the entire "game of education" and affects everyone involved. In 1980, the teacher's primary role will be to manage the learning process and educational program and also provide counseling and motivational-inspirational support for his or her students. No longer the verbal source of facts, the teacher will spend time exploring concepts and ideas. In my discussions, I will use the word manager of the learning process because this term is common in education today. In my opinion, the word manager does not adequately describe the challenging, dramatic and exciting role of the teacher in the decade ahead.

After accepting the premise that individualized learning will become the heart and core of future education, I found myself personally confused for a considerable length of time as to how these new systems were going to work. My most frequent request of educators, as an architect, was "Please describe as exactly as you can what a teacher will do each day and each week. Also, describe in detail what a student will do each day and each week." If you can gain an insight into these two areas, you will have the beginning of a solid concept of the school systems and school facilities of 1980.

In attempting to outline this new role of the teacher, you must realize that the description is general in nature. A basic condition of education in America is that it reflects the needs and desires of each individual community where it exists and, thus, it has many subtle variances as you examine it from school district to school district. I do feel, however, there are basic principles involved that are very necessary for you to understand in order to comprehend the next decade in education.

I assume that you now realize education is not going to take place in a classroom with a teacher lecturing to a group. To present my viewpoint of the teacher's role, I will break it into six broad classifications. The functions are not extremely precise and variations will most certainly occur, but it does seem reasonable that a broad understanding of what teachers will do can be found among these six basic areas.

The teacher will become A MANAGER OF THE EDUCATION PROGRAM AND LEARNING PROCESS FOR A GROUP OF STUDENTS. The size of the group could vary, but indications are that it will range from 35 to 50 students. This initially indicates fewer certified teachers in the schools of tomorrow. Let me hasten to warn you that at the same time the number of certified teachers appear to be subject to reduction, there will be an addition of many teacher aides, professionals, interns, consultants and other personnel which will increase the number of adults in the schools. In the capacity of manager, the teacher is administering the learning process for each student based upon individual needs. You will remember that curriculum materials will be in individual lesson units rather than larger pieces, and , also, that technology will be available to convey this knowledge to the individual student. Schedules will be immensely flexible, capable of change daily, if necessary, and based upon the learning needs of individual students. Teachers will function cooperatively as they seek guidance and knowledge from each other in order to devise and plan the learning needs for each student. Perhaps one-half of the teacher's time will be involved in this management role. Obviously, this implies a setting where learning is taking place in group sizes different than is found in today's normal classroom situation. Many educators

and lay persons have a serious misunderstanding of the meaning of individualized learning and the teacher's role as a manager. They seem to envision it as a totally free situation in which a student literally picks and chooses what he desires to do each day. This simply is not the case. Most assuredly, there will be schedules which create commitments on the part of the student. It should be added these schedules will be quite different from the computerized modular scheduling which we hear much about today, because today's scheduling creates an extremely undesirable fixed situation. Scheduling is one of the keys for unlocking the possibility of this new educational system. Unless a completely different utilization of time is made in the school, conditions will be locked and goals will not be achieved. We will have schools where the entire facility will be managed by a computer much the same as a computer manages reservations on an airline. The facilities really become a vast assortment of learning situations with schedules changing daily as they are built to surround the learning needs of individual students. Without a computer, it could not be determined if a student, for example, could use something in the science room the following Tuesday at 2:00 o'clock in the afternoon. The computer could tell if it would be available or if five other students had scheduled use of this learning tool at the same time. This type of difficulty is easily managed by a computer. When you call an airline to make reservations for a flight next week at a certain time and day, they quickly communicate with their computer to find out if there is a seat available for you and in seconds will convey this information to you. This same capacity of the computer will apply in schools. Again,

I caution you, this is not computerized modular scheduling.

Thus the teacher is not in the classroom, but probably finds her work position in open space, involved in a different administrative grouping of students so that she can function as the manager of the learning process on an individual basis for students assigned to her.

Perhaps the second major role of a teacher will be to PROVIDE COUNSELING AND MOTIVATIONAL SUPPORT FOR STUDENTS. The role of counselors appears to be on a threshhold of great change. Today, in a typical high school, you will frequently find one counselor for approximately 250 students. In the next decade, this will probably change and we will find the teacher, in her management role, providing the majority of the day-to-day, week-to-week counseling and motivational support for students assigned to her group. The very nature of her task - to build learning experiences around the needs and interests of each individual student - will require her to have intimate knowledge of the background and emotional characteristics of each student. There probably will be professional counselors in the schools, but these counselors will primarily counsel the teachers rather than the students. They will act as professional advisors to the teachers.

An interesting logistical problem occurs as this function is carefully analyzed. How do we control and store the student's records? Because much of the information stored is of a confidential nature, in some cases it would be damaging if it became public knowledge. Traditionally, such records have been stored in locked vaults, usually near the front office of the school where there is constant observation and

control when such a vault area is unlocked. We do find cases now where these records have been placed on microfilm to conserve space, but the same locked situation occurs. This fails to work in this new form of education if for no other reason than pure logistics. If you have gained an insight into the role of the teacher, you now realize these teachers are widely disbursed throughout facilities and certainly cannot all be placed near one central storage point. It is simply impossible to place one set of records in a locked storage area at a point in the building that would be convenient to all the teachers. In fact, it would be a most aggravating problem of movement and probably would cause substantial failure in administrating these records. There is an easy way out, and, again, the computer provides the answer. By placing all student records in a central computer storage area and then providing terminals for the teachers, the whole problem can be solved. Disbursal of computer terminals will bring knowledge to where the teacher is working most of the time. Also, the confidential nature of the records is protected because there is no access to them unless you have the code to release the information from the computer. Further, with a computer, it makes it an easy task to either insert new information concerning a student or to correct or remove information from computer storage. It might be added, this change in definition of counseling functions along with other implications, greatly changes the function and physical aspects of what we now consider the front office area of a school. When this is fully analyzed, you will find, essentially, that the typical front office suite does not exist.

Another function of the teacher will be to DEVELOP AND MANAGE INSTRUCTIONAL MATERIALS IN A PARTICULAR SUBJECT AREA. Teachers will still be, to some degree, specialists because they will still be primarily trained in such areas as English, Science, History or other disciplines. As a specialist in a particular area, the teacher will probably find herself with the responsibility for the curriculum material in that school which is related to her particular subject area. Obtaining curriculum material and preparation of it within the school itself, based upon individualized learning units, will be managed, to a large extent, by the teachers. The fact giving methods and techniques of curriculum development could involve learning activity packages, computer terminals, various audio-visual devices or a variety of other means technology will be providing.

The teacher will LISTEN TO SMALL GROUP DISCUSSIONS. The teacher will spend part of her time listening. Please note I said "listen", not "lecture". The teacher in the schools of the next decade will not be a verbal source of facts. Since information will be delivered to the student on an individual basis by a variety of methods, she will not be required to talk, talk, talk. As a listener in small groups, this obviously indicates that all learning does not happen as a single student is involved with a single learning device or piece of curriculum. Different size groups will begin to emerge.

It appears that another role of the teacher will be to SEEK OUT AND ORGANIZE LEARNING EXPERIENCES IN THE COMMUNITY. The school of 1980 will become, to a large extent, a home base or center of operations for the learning process. It will

extend itself outward from this home base to encompass the entire community around it. A vast variety of learning experiences extremely valuable to development of individual students can be found outside the school. Schedules are immensely flexible. Movement is flexible. And the teacher is not tied to classroom lecturing. Thus, when the individual needs of the student will be bettered by utilizing a learning experience of some type in the community, such experience will be developed and utilized. It appears that the teacher will have a major role in this, due to her management position.

Lastly, the teacher will MANAGE INTERNS, AIDES AND SECRETARIAL HELP. The new role of the teacher is obviously a very demanding one and will require the very finest of professional ability. The school of 1980 will not waste the valuable time of teachers doing an assortment of administrative chores. They will be given support in the form of a variety of people to do many of the household chores and functions that can be delegated. Their role in this situation will be simply the management of these services.

The implications for facilities to accommodate the new role of the teacher can only be described as fantastic. It behooves all of those having any responsibility for educational facilities to conduct in-depth studies in this changing role of the teacher so that resultant buildings properly accommodate the form and purpose of life that that building is meant to house.

The trend I choose to call LEARNING EXPERIENCES IN THE COMMUNITY has great implication. The condition of isolation within which most education operates is not suitable to meet the needs of today and the future. I will not attempt to state the case for education moving out of its buildings and becoming community oriented for the reasons seem obvious as we hear the many comments on the relevancy of today's education. If one carried this concept far enough, it is possible to envision that the high school of 1980 might not even be a place, but rather, would be more of a social condition. Already we have an example of the "no school" school in the Parkway Program in Philadelphia where high school students have the whole city for a classroom. The learning process for these students is being provided by places and events that are under the orderly control of teachers who are functioning primarily in manager roles. This high school has no walls, owns no buildings, and it literally exists in the city.

It appears that education in the future will actually become part of life and part of the community - perhaps as I mentioned earlier, almost life itself. No matter where a school is located, surrounding it is a community of people, of business, of life itself. To be truly relevant and meet the needs of individual students, it seems mandatory that valuable learning experiences available in this surrounding community be utilized. The process of individualized learning and the new role of the teacher, combined with immensely flexible schedules, will make utilization of these community learning resources possible.

Development and use of these resources will again vary from community to community. Perhaps one of the strongest reasons for a community oriented program will

be motivation of individual students. Actual use of various experiences will vary according to the needs of the individual student. For educators to develop this concept fully, it requires new understanding and new cooperation on the part of the lay and business communities. It appears that communities are ready to assume these responsibilities and fulfill their obligation to assist education in reaching this new goal.

Perhaps it would be easier to explain this concept by citing cases of personal experience. We currently have under design a high school in which approximately 25% of its programmed offering is based upon utilizing learning experiences in the surrounding community. In this particular case, over 50 such resources have already been developed for utilization by the educational system. These include auto shops, industry research labs, banks, insurance offices, contractors, farmers, manufacturing operations of various types, accounting offices and many others that simply create a typical list of the businesses found in most American settings. The owners of these establishments have committed their facilities for learning experiences to be utilized in a manner outlined by the educators so that the experience will be helpful and meaningful to students. In some cases, learning experiences will happen on a regularly scheduled basis. Some will be single visits for simple familiarization with what happens in the real world. Other experiences will be used because of a particular need at a particular time of a particular student. Some will be vocational.

This obviously has a direct effect upon the building design because we no longer are necessarily going to find the auto shop, industrial arts, metal shop,

electronics and the variety of learning places we now call vocational education in the school itself. Many of these subjects will be learned under real world conditions with real proprietors as teachers - all managed through the educational system.

I might add that our own office functions as a learning experience in our community for three high schools. These high schools have a course titled "Architecture" on their programs. The classroom is our office. We have a structured class of an hour and one-half each week. The class follows a curriculum developed in joint cooperation with the educators. The structured curriculum is really only a small portion of the learning experience for the course includes students in the total variety of experiences we go through as architects. They accompany us to client conferences, planning sessions for education, supervision of construction, office conferences and all the many experiences that are normal to an architectural practice. Our students come to us for a variety of reasons. Some think they want to become architects, and others simply want to know what an architect really does. Teachers ask other students to come for various reasons, sometimes unknown to us. There are no pre-requisites for this course, and, usually, the students who attend are chosen from a hat as the demand for this kind of an educational experience is overwhelming among the students.

These examples should illustrate that education of the future will not be contained within the walls of the school, but, literally is based upon, is involved with and utilizes its entire community. The school thus becomes a base of operations, and there is rather constant movement to and from it. Traffic patterns, size of facilities and equipment to

be included in the building are some of the conditions that will be greatly changed because of this educational trend.

Another important trend to note can be termed THE LEARNING PATH OF A STUDENT. Previously discussed trends on individualized learning, the changing role of a teacher and use of learning experiences in the community certainly indicate some different happenings as each student pursues his process of learning. It is obviously important to understand this learning path and to obtain a visual picture of it. Earlier I said one of my most common requests when I was trying to learn about education 1980 was, "Please describe to me what the teacher does each day and what the student does each day." You have a glimpse of what a teacher does, but emphasis must also be placed upon what a student does.

You will recall that curriculum materials, in a broad sense, have been broken down into many small pieces so that facts can be learned on an individual basis. Units of curriculum will come in a variety of forms that will include learning activity packages, a vast variety of teaching machines, computer assisted instruction and individuals involved in "hands-on" experiences with equipment and the real world. It is probably difficult to estimate how much of a student's time will be spent as a single individual learning in an individual setting, but it appears this could be upwards to 50% of a student's time.

Beyond this we find the student involved in a variety of group sizes under a variety of conditions. Certainly students will be found discussing information gained in their individual learning experiences in small groups. This could be two to six students.

There will also be times when these groups will begin to increase to 15, perhaps to 30 or even more. Remember, schedules are flexible and teachers, in their management roles, are moving the learning process in different directions and in different modes as is required by the learning needs of their individual students. Thus, although much of the learning will be done individually, education will be taking place in a whole variety of group sizes.

It is interesting to note that at times the old traditional class size comes into being as a logical size group to be involved for some experiences. In this new form of education, if this size group applies, then certainly it will be used.

It has been noted that the teacher, essentially, does no lecturing. This is probably true as far as delivery of facts pertaining to a particular subject area is concerned. It does not, however, rule out the possibility that the teacher will assemble larger groups for delivery of a short, highly motivational presentation concerning a particular subject area. Also, there are times when it will be necessary to have meetings of larger groups for organizational purposes. Speaking of organizational patterns in schools, students will be grouped administratively in different ways. A term that is appearing more and more to describe student organization is the word HOUSE. This administrative grouping will be discussed under a separate trend.

As you become more involved with these various trends and begin to understand what is happening inside the building, you will realize that there is need for great variety in the sizes of spaces for education to take place. The nature of a presentation

held under large group settings should be carefully noted because it has considerable significance to design of facilities. It has been common in the past few years to place sophisticated spaces for large group instruction in secondary schools. These spaces were equipped with a vast array of audio-visual devices to facilitate carefully prepared presentations by master teachers to a large group of students. Many times these spaces were divisible into several smaller units each still handling what would be termed a large group. This type of space was often very expensive when compared to other portions of the school, and it does not appear to be a part of the school facility of 1980. The spaces for grouping students into various sizes, including large groups, need to be far more flexible, more casual, more quickly obtained and certainly more simple than the heretofore large group spaces.

In some schools we have under design, the large group spaces are treated more like convention centers in large hotels and embody great **flexibility** in use and size. It is also quite possible to conduct many of these large group functions in a far more casual atmosphere. Places like the Commons or the student Forum need to be places where quick assemblies of large numbers of students can be held for short duration presentations.

If you have been astute in your observations, you will have already detected that teaming of teachers takes place in the schools of 1980, but it is quite a different matter as compared to the team teaching that many educators refer to today. This touches upon one of the difficulties in education, and that is in simply communicating ideas from one person to the other. Educators use quite an assortment of words in

expressing themselves, and, frequently, the same word has many different meanings. Certainly, whenever an educator starts talking about team teaching, you should ask him to define the term before he starts.

The learning path of the student also takes him in and out of the building as he becomes involved in the previously mentioned learning experiences in the community. Thus we see a very flexible, ever-changing condition as the student of 1980 goes about the learning process. It is distinctly different from what happens in most schools today, and, unless you have some understanding of it, you can't possibly comprehend education 1980.

The trends of Individualized Learning, the Changing Role of the Teacher, Use of Learning Experiences in the Community, and Learning Paths have a profound effect upon the functional relationship of almost every activity in the school building and, thus, the facility's architecture. The condition and trend I will describe next I term FLOW, NOT SURGE. The learning path of the students indicates a totally different people movement situation within school buildings. Within the schools of 1980, you will no longer find classes which cause set numbers to move "en masse" from one situation to another at a designated time. In lieu of this, you will find rather quiet flowing situations with students coming and going individually and in small groups. This change is extremely significant to architecture for it makes avail-

able a whole variety of new choices regarding shapes, spaces and plan usage. It will greatly increase the efficiency of school facilities because it will not be necessary to turn over upwards of 15% of the building for passage of students. In our practice, we now have a building that commits only 7/10 of 1% of its total area to space to be used exclusively for circulation of students. In fact, in this particular facility, --an elementary school -- it was found that when all of the educational functions seemed to be accounted for there were almost 8,000 square feet of space remaining to be used for other purposes that would not have existed in a traditional building....space that had normally been used simply for corridors. This particular school is based upon all of the concepts I have discussed and would be termed, in today's language, an "open plan school."

Transportation to and from the schools will also be drastically affected. Students will be coming and going individually or in smaller groups at all times throughout the day. All students will not start school at the same time in the morning. Students will go to and from the school at different times throughout the day as they are leaving their base of operations to move out into the community to become involved in various learning experiences. In most communities in America today, many school buses arrive en masse at a set time in the morning and leave again en masse at a set time in the afternoon. This condition probably will not exist in 1980. When school buses are used, they may very well move continuously throughout communities travelling on regular schedules and making regular stops throughout the day - perhaps in a manner similar to present day bus systems. Maybe other means of transportation to and from the

school will replace the bus entirely. The center for learning will then become, in essence, a docking station. In 1980 probably most students will spend 1/3 or more of their time away from the school itself. In some cases, as illustrated by the Parkway Program in Philadelphia, there will not even be a school.

It should be evident why the school houses of 1980 will not contain boxes called classrooms and crowded highways called corridors to connect them. In this context, it is difficult indeed to comprehend the statistic that while our national investment in school facilities each year now approaches 8 billion dollars, the majority of the new educational facilities being constructed are many years obsolete the day they open the doors. The wasteful expenditure of these amounts of money alone is a national scandal, but the greatest crime involved is the deterrent effect it has upon achieving new forms of education. It can only be assumed in these cases that people - be they architects, educators or demanding, misinformed lay people - simply have made no attempt to truly examine the educational systems as related to the needs of today and the tools available.

You will note in the trends discussed that, in theory, the need for buildings decreases. As education moves out of the buildings, leaving them basically a center for operations, building needs diminish. If every school moved 25% of their program out into the community, it would reduce building needs by 25% in America. This would be an astronomical figure. Also, I have mentioned the new efficiency of building which indicates smaller buildings or the ability for a facility to handle a greater number of students. This flow and surge characteristic in which up to 1/3 of

the students will not be in the building at any given point of time, indicates more space available for others. Others might be more students of the same age levels, a adults, or people of all ages who come to utilize this facility which really, in the final analysis, is simply an assembly of many varied types of learning devices and learning tools.

Educational facilities of 1980 will probably have primary missions to fulfill, and, when these are taken care of, the facilities themselves will become available from early morning until late at night as centers for learning for people of all ages. For example, a secondary school would have as its primary mission the responsibility of providing a secondary level education for a certain group of students. As long as this primary mission is met, then anything in the facility or the educational system that is not being used would be available from when the school opens in the morning until it closes late at night. Thus, we see people of different ages learning side by side. This further reduces the claim that education is not relevant for it helps break down the isolation factor so prevalent in schools today.

Another point that should be mentioned under flow not surge has to do with eating. We are all quite familiar with the set lunch hours that exist in most schools in America, and the masses of humanity that converge on one spot for a short period of 30 minutes to eat. This kind of a process has not only been costly in the relationship of facility needs, but, also, in many schools, it results in an abominable situation where students are fed more like cattle than human beings. The schools of 1980, following the flow not surge definition and the nature of the learning path of students,

will eliminate the set lunch hour. Food will be available almost the minute the school opens and will continue to be available in some form until school closes, whatever time that might be. Eating will take place as it relates to a student's need for food and as it fits into the schedule of learning experiences. Food will be there for not only the students involved in the primary mission of the educational institution, but will also be equally available for people of other ages who will probably be in the building throughout the day. In actuality, food service becomes much easier, much simpler, and requires less space. Various automated devices will handle large segments of food disbursal as this will be more economical than operating full cooking kitchens that require personnel for both preparation and service. These facts should give you a glimpse of the characteristic of a constant flow of individual human beings in and out and through the educational facility of 1980 in contrast to the mass movement of groups that now occurs in most schools.

Another trend for education 1980 I will call HOUSES. This is simply a title selected to discuss what perhaps could best be described as administrative grouping of students. Earlier the word houses was mentioned, and, if nothing else, this is another of these words that means different things to different people. Hopefully, I can clarify it to some extent for you.

As you consider the ramifications of the various trends already discussed, you will discover the individual student is almost drifting alone through his school and

through his educational process. Currently in schools, we have home rooms to relate the student to some type of an administrative group within his school. It is quite obvious the new trends eliminate this characteristic of schools, and educators feel it is important to seek a new form of grouping. Thus, the term house has come into being and is now used rather frequently.

Most of all, houses have come about because of a need to find a place in a school where a student could "relate himself a little more to a group" or "put his roots down". Another way to describe it is "a hang your hat space."

You will find, in some cases, where upwards of four, five or six teachers, each with a group of 35 to 50 students, are assembled administratively into a group. This type of group is what many refer to as a House. What this does is start creating larger group units in a school which can develop esprit de corps and similar feelings. Also, in this space the student would find a place to hang his coat, a small space for his locked valuables, his teacher who is managing his learning process and a peer group in which he can develop close friendships. This could well be where he would first go when entering the school to start his learning experience. It will probably be his last stopping point on his way out of the building as he goes to a learning experience in the community or to return to his home. Sometimes, the facilities in a very general way will reflect these house groupings. This does not necessarily require walls. It is more utilization of space and the creation of atmosphere. The very nature of the group itself brings about an identity. In one high school for 1,000

students in our office, they have established four such houses. In another high school for 1,650 students, there are seven houses. Again, you will find considerable variety as to definition of these houses, as to how they might work to some extent educationally as well as administratively.

In the house areas you will find, as I mentioned, the teachers and, also, the rest of the teaching team which includes interns, para-professionals, aides, secretaries and perhaps community advisors. Thus, we have taken the individual teacher with her group of students, associated her with several other teachers and their groups, added to this other staff members, and placed a cocoon of space around this whole group and called it a House.

Sometimes these houses will have definition related to other educational implications. For example, a house can be formed on a comprehensive basis which includes students of all ages and all abilities. Also, teachers in such a House represent a variety of disciplines. Another type might be a house organized around a tract grouping which would indicate a separation of students based upon age, abilities, or interests. Another variation might be content oriented houses, structured around a particular subject area. It could perhaps be broken into units somewhat similar to the way colleges are divided today. I feel personally that the comprehensive grouping answers most of the basic reasons for the new form of education. My experience has been only with comprehensive houses.

You should not get "hung up" with the word House. Remember what is happening is, basically, an administrative grouping, the establishment of a "hang your hat"

space for the students and, thus, this can take different forms. We are involved with another high school where they use the words Team Learning Centers, which, in this case, indicates clusters of 40 students as an element for grouping.

It appears that perhaps students will expend up to 50% of their time in these house areas which gives architecturally a clue as to the size of the space. Great difficulty will be encountered in utilization of space if these house areas attempt to become large enough to continuously hold all of the students assigned to that house. The dictates of each student's individual learning path simply makes it impossible for him to spend much more than 50% of this time in the house area. He will be elsewhere doing other things. A great deal of the individualized learning will probably take place in the house area. Because of the great flexibility needed in group sizing, these areas will probably be very open, very free flowing spaces offering the opportunity for learning to take place in a variety of group sizes.

Also, because of the great flexibility that is built into this whole new form of education, teachers probably will not be in offices, but will find themselves in open space along with the students very much like is being done in industry. There will be conference rooms and private spaces for confidential discussions.

The grouping of students will obviously vary at different age levels, but, in a general way, the same requirement is being met at all levels. That is, establish a place for the students to relate a little more to this part of the building than any other place in the school facility. It is sort of a home within the school.

The last trend I will discuss is that of OPEN SPACE PLANNING. I have deliberately left this until last because open plan schools are a frequent subject of discussion, and, frequently, a source of conflict in many communities in America. Tragically, many people, including architects, educators and lay people, approach the subject of open space completely backwards. You are aware that a school building is only an interpretation of the educational process - the life and the form of functions that are going to take place in it. It is ridiculous to talk about an open space school simply on the basis of open space. What should be talked about are the educational concepts and what is going to happen in the facility from an educational standpoint. Whenever this is done reasonably well, you will probably arrive at only one general conclusion, and that is an open plan facility. If you approach it this way, you will then understand what is happening, and the foolish waste of time discussing the pros and cons of purely open space will be eliminated.

I feel it is important to clarify that when I refer to an open plan school, by no means does it mean all of the walls are left out. It could be a building where there are essentially no walls, but this is not necessarily true in every case. Most of all, it is a school where there is tremendous flexibility and adaptability because spaces flow smoothly from one to the other, usually without doors or fixed closures. There can be, however, some subtle breaking points to create nooks and crannies, provide some quiet places, prevent noisy equipment from interrupting others and meet other similar needs. Thus, we are not talking about a wide open warehouse.

The point that we live in a changing world has been stressed, and we know education is not left out of this changing scene. This has great implications for

buildings and explains to some extent why open space in the final end is a very reasonable conclusion. Though these trends are the basis of a prediction as to education 1980, they certainly are not an accurate road map, and it is obvious there will be many adjustments and many unknown changes.

Education must be able to move in different directions very quickly as the situations demand, and must never again permit itself to become locked. It follows that the facilities that house the educational process must be equally ready to run in any direction that is necessary. They should in no way inhibit or restrict the educators from trying new forms and new ways in their educational systems. Thus, the time has come when we must stop just talking about flexibility and adaptability, stop simply giving it lip service only, and deliver the kind of facilities that have real flexibility and adaptability. Along with the concepts of open space planning, it seems important to place a horizontal slice of open air, either over or under the entire facility. As architects, we refer to the space when it is overhead as a loft plan building. It's great value to the educator is that it is a place where different kinds of things and services can be moved about and brought to different points in the building if necessary. Certainly walls of a permanent nature should be almost totally eliminated. Schools should be compact.....should put all possible area in one large unit under one roof. Building with many small pieces of open space in separate buildings find the educators involved with head-on collisions with the exterior walls. Again, they are locked. Essentially there will be no offices.

One of the problems now occurring in open space planning is that many architects

and educators have the feeling it is the thing to do, and, therefore, they must have an open space school. Again, in these cases, they often approach the problem backwards by attempting to take a traditional concept of education and start leaving out some walls and putting in folding partitions. The usual outcome is a tragic failure, and the end result is a clash of events and circumstances that can cost superintendents their jobs and bring considerable turmoil to an entire community. These architects and educators are the copiers. I can report to you that we now have this group aboard in America, and we are already seeing some tragic cases of what people call open plan schools.

The first open planned schools emerged as a result of in-depth discussions and planned processes where educational systems were examined and very carefully projected into the future. Planning was done by a sensitive, articulate process, and the buildings that resulted had much meaning and generally worked quite well. Unless you arrive at your own plan through this kind of a process, you are probably headed for great trouble. You must have an understanding of what is really going to happen educationally if you are to successfully create the kind of educational facility that will respond to the function of life it will contain.

Let us now look at some actual facilities that will illustrate some of these things I have discussed.

Within the trends I have presented and within the glimpse of these facilities, it is my hope that you have now acquired some insight into the Schoolhouse 1980.

Thank you.